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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

DAS, CHAMELI

ART UNIT	PAPER NUMBER
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2122

DATE MAILED: 02/19/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/938,886

Applicant(s)

MUKESH K. PATEL

Examiner

C.DAS

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 506-609 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 506-609 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4. 6) ☐ Other: _____

Detailed Action

1. Claims 506-609 are pending.

Specification

2. The abstract and the specification of the disclosure are objected to because the use of the trademark term "Java" has been noted in the abstract and the specification. It should be capitalized each letters in the word, or include a proper trademark symbol, such as TM or © wherever it appears and be accompanied by the generic terminology. Appropriate correction is required.

Drawings

3. The drawings are objected to because Fig 7A – 7D have not been described in the "Brief description of Drawing" section. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. Claims 508, 521, 541, 557,561, 575, 608 and 609 are rejected under 35 U.S.C, 112 second paragraph.

Claims 508, 521, 541,557,561, 575, 608 and 609 contain the trademark term "Java". Where a trademark to trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the

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requirements of 35 U.S.C. 112 second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App.1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify a source of goods, and the goods themselves.

Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe bytecodes and, accordingly, the identification/description is indefinite.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 509-609 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-70 of U.S. Patent No. 6,332,215.

Although the conflicting claims are not identical, they are not patentably distinct from each other because they are obvious variations of each other.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 506-520, 522-550, 559-573, 575-598 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dickol et al, US 5,875,336 and further in view of Krall et al, the article XP-002117590, TITLE: CACAO- a 64 bit Java Vm just in time compiler, source IEEE, November, 1997.

Regarding claims 506, 559, Dickol discloses:

- maintaining data for register-based instruction... memory (Dickol abstract, col 5 lines 13-20, Fig 3, col 3 lines 42-60)
- executing the stack-based instruction ... instructions (Fig 5, col 4 lines 42-50).

Dickol does not specifically disclose overflow/underflow mechanism. However, Krall discloses the overflow/underflow mechanism (Krall, page 1021, lines 1-10). The modification would be obvious because one of the ordinary skill in the art would be motivated to resume normal operations of the stack to translate the non native code to a set of native codes efficiently.

Dickol does not specifically disclose that the system generates exception. However, Krall discloses the accelerator produces an exceptions (Krall, page 1026, lines 27-36, page 1027, line 1-8). The modification would be obvious because one of the ordinary

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skill in the art would be motivated to deal with errors (or exceptions) efficiently as they arise during running a program.

Regarding claims 507-509, 560, 561, 562, (Dickol, abstract, Fig 3).

Regarding claims 510-511, 563-564, (Krall, page 1021, lines 1-10).

Regarding claims 512, 565 (Dickol, Fig 3).

Regarding claims 513, 566 (Dickol, col 6 lines 1-10).

Regarding claim 514, Dickol does not specifically disclose pipeline associated with the processing of the selected stack-based instructions. However, official notice is taken for pipelined stages). The modification would be obvious because one of the ordinary skill in the art would be motivated accelerate the processing time.

Regarding claims 515, 568, (Dickol, col 4 lines 33-40, col 5 lines 13-20), (Krall, page 1021, lines 1-10).

Regarding claims 516, 569, Dickol, col 8 lines 43-55.

Regarding claims 517, 539, 570, 591, Dickol, col 3 lines 55-60.

Regarding claims 518, 547, 571, 595, 596, Dickol (col 6 lines 1). Dickol does not specifically disclose ifine, ifge, ifgt, ifle, if_icmpeq, if-lcmpne, if_icmplt, if_cmpgt, if_icmple, if_acmpeq, if_acmpne, ifnull, innull, lcmp, fcmpl, fcmpg, dcmpl, and dcmpg. However, official notice is taken ifine, ifge, ifgt, ifle, if_icmpeq, if-lcmpne, if_icmplt, if_cmpgt, if_icmple, if_acmpeq, if_acmpne, ifnull, innull, lcmp, fcmpl, fcmpg, dcmpl, and dcmpg for branch instructions. The modification would be obvious because one of the ordinary skill in the art would be motivated to execute the instructions efficiently.

Regarding claims 519, 572, (Krall, page 1026, lines 27-36, page 1027, line 1-8).

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Regarding claim 520, Krall discloses virtual machine. (Krall, page 1017, Introduction). The modification would be obvious because one of the ordinary skill in the art would be motivated to compile and run the program in platform independent environment.

Regarding claims 522, 573, 575, (Dickol, abstract, fig 2).

Regarding claims 523, 576 (Dickol, col 4 lines 34-40).

Regarding claims 524, 525, 527, 577, 578, 579, 580, neither Dickol nor Krall disclose including program counter. Official notice is taken including program counter. The modification would be obvious because one of the ordinary skill in the art would be motivated to control the address of the next program sequence to improve execution frequency.

Regarding claims 526, 546, 594, neither Dickol nor Krall disclose including shared cache. Official notice is taken including share cache. The modification would be obvious because one of the ordinary skill in the art would be motivated to reduce the storage space in the computer system.

Regarding claims 528, 581 (Dickol, abstract, col 4 lines 50-60).

Regarding claims 529, 582 (Dickol, abstract, col 4 lines 50-60).

Regarding claim 530 (Dickol, Abstract, Fig 3, Fig 4, Col 3 lines 42-60, col 4 lines 50-60, col 5 lines 40-55), and (Krall, page 1026, lines 27-36, page 1027, line 1-8).

Regarding claims 531, 584 (Dickol, col 4 lines 7-14).

Regarding claims 532, 585 (Dickol, col 4 lines 30-45).

Regarding claims 533, 586 (Krall, page 1026, lines 27-36, page 1027, line 1-8).

Regarding claims 534, 587, (Dickol, col 4 lines 30-50).

Regarding claims 535, 536, 588, neither Dickol nor Krall disclose including program counter. Official notice is taken including program counter. The modification would be obvious because one of the ordinary skill in the art would be motivated to control the address of the next program sequence to improve execution frequency.

Regarding claims 537, 589 (Dickol, abstract).

Regarding claims 538, 590, (Dickol, Fig 5, col 4 lines 42-50) and (Krall, page 1021, lines 1-10).

Regarding claim 540 (Dickol, Abstract, col 3 lines 41-55, col 4 lines 41-50).

Dickol does not specifically disclose the hardware processor is an accelerator. However, Krall discloses accelerator during translation is shown in Krall, summary lines 8-9. The modification would be obvious because one of the ordinary skill in the art would be motivated to compile, executes and run the program faster than the regular hardware accelerator.

Krall discloses virtual machine. (Krall, page 1017, Introduction). The modification would be obvious because one of the ordinary skill in the art would be motivated to compile and run the program in platform independent environment.

Krall discloses the accelerator produces an exceptions (Krall, page 1026, lines 27-36, page 1027, line 1-8). The modification would be obvious because one of the ordinary skill in the art would be motivated to deal with errors (or exceptions) efficiently as they arise during running a program.

Regarding claim 541, (Dickol, abstract, col 4 lines 42-45).

Regarding claim 542, (Dickol, abstract).

Regarding claim 543, (Dickol, abstract, col 3 lines 40-50, col 4 lines 45-60, col 6 lines 1-2), neither Dickol nor Krall disclose including program counter. Official notice is taken including program counter. The modification would be obvious because one of the ordinary skill in the art would be motivated to control the address of the next program sequence to improve execution frequency.

Regarding claim 544, (Dickol, col 5 lines 25-30).

Regarding claim 545, neither Dickol nor Krall disclose including program counter. Official notice is taken including program counter. The modification would be obvious because one of the ordinary skill in the art would be motivated to control the address of the next program sequence to improve execution frequency.

Regarding claims 548, 567, neither Dickol nor Krall disclose pipelining the instruction. Official notice is taken in pipelining. The modification would be obvious because one of the ordinary skill in the art would be motivated to accelerate the processing time.

Neither Dickol nor Krall disclose flusing. Official notice is taken in flushing the accelerator. The modification would be obvious because one of the ordinary skill in the art would be motivated to clear a portion of the contents and filling the instructions again to speed up the execution time.

Regarding claims 549, 597 (Dickol, abstract, col 8 lines 42-55).

Regarding claims 550, 598, (Dickol col 5 lines 10-20) and (Krall, page 1021, lines 1-10).

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For claim 583 see the rejection of claims 506 and 530 above.

For claim 592 see the rejection of claims 506 and 540.

For claim 593, see the rejection of claims 506 and 513.

8. Claims 521, 574 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dickol et al, US 5,875,336 and further in view of Krall et al, the article XP-002117590, "CACAO- a 64 bit Java Vm just in time compiler", source IEEE, November, 1997 and Yates (US 6,091,897).

Regarding claims 521, 574 neither Dickol nor Krall disclose reverting to processing instructions. However, Yates discloses reverting to processing instructions (Yates, col 29 lines 15-20). The modification would be obvious because one of the ordinary skill in the art would be motivated to execute the instructions efficiently.

Allowable Subject Matter

9. Claims 551-558 would be allowable if a terminal disclaimer will be filed to overcome the rejections based on a nonstatutory double patenting. Claims 557-558 would be allowable if these claims can be rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph.

Claims 599-609 if a terminal disclaimer will be filed to overcome the rejections based on a nonstatutory double patenting. Claims 608-609 would be allowable if these

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claims can be rewritten to overcome the rejections(s) under 35 U.S.C. 112, second paragraph.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

TITLE: Bytecode program interpreter apparatus and method with pre-verification of a data type restrictions and object initialization, US 6247171 B1

TITLE: Process of executing a method on a stack-based processor, US 6125439 A

TITLE: Stack management unit and method for a processor having a stack, US 6038643 A

TITLE: Hardware virtual machine instruction processor, US 6021469 A

TITLE: Instruction folding for a stack-based machine, US 6026485 A

TITLE: Processor for executing instruction sets received from a network or from a local memory, US 5925123 A

TITLE: Object and Native Code Thread Mobility Among Heterogeneous Computers, author: Steensgarrrd et al, ACM, 1995.

TITLE: Java Byte code to Native Code Translation: The Caffeine Prototype and Preliminary Results, author: Hsieh et al, IEEE, 1996.

TITLE: Efficient Java VM Just-in-Time Compilation, Krall, IEEE, 1998.

TITLE: A Comparison of Full and Partial Predicated Execution Support for ILP Processors, author: Mahlke et al, ACM, 1995.

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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chameli Das whose telephone number is 703-305-1339.

The examiner can normally be reached on Monday-Friday from 7:00 A.M. to 3:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Tuan Dam can be reached at 703-305-4552. The fax number for this group is (703) 872-9306.

An inquiry of general nature or relating to the status of this application or proceeding should be directed to the group receptionist whose telephone number is 703-305-9600.


CHAMELI C. DAS
PRIMARY EXAMINER

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2/14/04